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UKA after spontaneous osteonecrosis of the knee at 11 years follow-up

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Objectives: Safety and efficacy of unicompartmental knee arthroplasty (UKA) in osteoarthritis has been shown in large patient series. It has been matter of discussion whether or not spontaneous osteonecrosis of the knee (SONK) can successfully be treated with UKA.

Methods: A retrospective approach included 52 cases of UKA for SONK of the femoral condyles. Four implants were revised (7.7%), and seven patients had died. Nine patients were interviewed by telephone, 28 followed the invitation for clinical examination including clinical scores (KSS and WOMAC) and radiographies. Satisfaction of patients was recorded in four categories. Four patients (7.7%) were lost to follow-up.

Results: Average follow-up was 10.9 ± 4.8 (4 - 25) years. Average age at operation was 66.6 ± 9.7 years. Two knees were mobilized within 3 weeks after the operation due to stiffness. The KSS score increased from a preoperative 85 ± 30 to 173 ± 27 ($p < 0.0001$) at latest follow-up. WOMAC was 7.7 ± 11.4 at latest follow-up. Most patients were satisfied (21.6%) or very satisfied (75.7%) with the outcome of this surgical procedure. One patient was dissatisfied (2.7%).

Conclusions: This study shows that spontaneous osteonecrosis of the knee (SONK) can successfully be treated with UKA and prevent TKA with a good mid- to long-term follow-up.

P19-545

Rotating hinge knee prostheses: primary and revision implant

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Objectives: The aim of this study was to elucidate clinical short- and mid-term results of a rotating hinge knee prosthesis. Results of primary implants were compared with those of revisions.

Methods: 113 patients with 121 rotating hinge knee prostheses were included with a mean follow-up of 51.7 ± 40.8 months (58 primary implants, 63 revisions). 45 patients with 49 prostheses were available for clinical assessment (21 primaries, 28 revisions).

Results: The clinical results of both groups did not show significant differences in the applied scores (KSS, UCLA, Lequesne, VAS). Of 121 included implants 18 had to be explanted (14.9%), mainly due to infection. For primary implants the explantation rate of 5.2% compared to 23.8% in revision cases.

Conclusions: The rotating hinge prosthesis allows good clinical and functional results in both primary and revision knee arthroplasty. The risk for revision interventions and implant failure is significantly higher in revision cases.

P19-562

In-vitro testing of loosening of the femoral component in comparison of several high-flex and conventional PS designs

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Objectives: High-flexion (HF) TKA designs were introduced in order to achieve greater flexion than with conventional TKA designs. Although early clinical results are promising, recent literature raises concerns about fixation and risk for early loosening of the femoral component, associated with weight-bearing during deep flexion. This study's aim was to measure the loosening force of the femoral component in several PS-TKA designs during a simulated deep flexion activity.

Methods: The loosening force of the femoral component of ten contemporary PS-TKAs, including five HF and five conventional designs from the major orthopaedic companies were evaluated. Each TKA was implanted in a femoral bone model and placed in a loading frame in 135° of flexion, with the tibia vertically. Loosening of the femoral component was induced by raising the tibial insert with constant displacement rate, maintaining the same flexion angle. The resisting force was recorded continuously. A stereo-photogrammetric system registered the relative motion between the femoral component and bone model. The loosening force was determined when a gap of 2 mm was observed. The influence of pegs on the loosening force was also investigated.

Results: Generally, conventional femoral designs required higher forces before loosening occurred compared to HF designs ($p<0.001$). This is due to the load sharing between the posterior femoral condyles of the TKA and the femoral bone seen with conventional designs in deep flexion. In the group of the HF designs there was at least one statistically significant difference between the designs ($p=0.015$), due to the shape of the internal box cut. For some designs, the presence of pegs induced a statistically significant change in loosening force

Conclusions: Several design characteristics of the femoral component can alter its resistance to loosening. In this in vitro study, it was shown that the shape of the internal box cut and the presence of pegs, as well as the geometry of the pegs, are important factors for the loosening force.

P19-594

A prospective, single blinded, controlled trial comparing the postoperative range of motion of the P.F.C.® Sigma RP-F Knee with the P.F.C. Sigma RP Knee in primary total knee arthroplasty. Results after 1-year follow-up

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Objectives: The primary objectives of a TKA are to reduce pain, maximise range of motion (ROM) and provide stability through the gait cycle. Routine actives of daily life require flexion of 100° to 125° for Western adult populations. The challenge is that the goals of patients undergoing TKA are changing. It is no longer sufficient to provide normal, pain-free function but now, patients desire knees that meet more demanding and active lifestyle needs.

The press fit condylar P.F.C. ® Sigma RP-F (rotating-platform, high flexion) knee is designed to provide a range of motion (ROM) of 155 degrees without compromising wear, polyethylene contact stresses, patellofemoral tracking, or stability.

The purpose of this clinical study is to determine if the P.F.C.® Sigma RP-F Knee has a greater post-operative range of motion compared with the P.F.C. Sigma RP Knee and this function is maintained without compromising implant survival.

Methods: This is a randomised controlled single blinded study. The subjects were randomly assigned preoperatively either to the study device P.F.C.® Sigma RP-F Knee or its comparator P.F.C. Sigma RP Knee.

A total of 100 patients were included in the study, 50 patients for each group.

Age, sex, body mass index, preoperative diagnosis, grade of varus/valgus deformity and preoperative ROM were analyzed to determine the effect of design on postoperative ROM.

We also evaluated the functional results with the KSS and WOMAC Scores preoperatively and 1-year after surgery.

Results: The mean age was 66 years (47-75), the mean BMI 30.04 (24-37.1) and the mean preop. ROM was 101°, with no statistical differences between the groups.

The mean increase in active ROM in the Sigma RP-F group was 19.3 degrees, compared with 7.8 degrees in the rotating-platform group (P=0.001). The mean increase in active ROM in patients who had less than 95 degrees of preoperative motion was 29 degrees in the Sigma RP-F group, compared with 10 degrees in the rotating-platform group (P = 0.002).